Patent Claims

1. Process for the manufacture of adapted, fluidic surfaces on gas turbine blades in the region of a flow inlet edge and/or a flow outlet edge of a gas turbine blade, characterized by the following steps:

(a) generating a nominal milling program for the manufacture of fluidic surfaces in the region of one flow inlet edge and/or one flow outlet edge for an ideal gas turbine blade;

(b) measuring the area of an actual gas turbine blade in the region of one flow inlet edge and/or one flow outlet edge thereof;

(c) generating a milling program adapted to the actual gas turbine blade in order to manufacture fluidic surfaces in the region of the flow inlet edge and/or the flow outlet edge for the actual gas turbine blade, whereby measured values determined in step (b) are used to adapt or change the nominal milling program generated in step (a) to the milling program for the actual gas turbine blade;

(d) manufacturing of the fluidic surfaces on the actual gas turbine blades in the region of the flow inlet edge and/or the flow outlet edge by milling with the use of the milling program generated in step (c), whereby, in a first partial step, coarse-milling, in particular roughing, is used to remove material in the region of the flow inlet edge and/or the flow outlet edge, and whereby, in an adjoining second partial step, fine-milling, in particular planing, is used to automatically round the flow inlet edge and/or the flow outlet edge.

2. Process in accordance with Claim 1,
characterized in that, referring to step (b), the actual gas turbine blade is measured in such a manner that, in the region of the flow inlet edge and/or in the region of the flow outlet edge, respectively one series of measuring points is determined on a suction side and on a pressure side of the gas turbine blade, whereby each series of measuring points consists of several measuring points distributed over the height and/or length of the flow inlet edge and/or the flow outlet edge.

3. Process in accordance with Claim 2,
characterized in that, referring to step (c), for each measuring point, a deviation between the ideal gas turbine blade and the actual gas turbine blade is determined, whereby these deviations are used to change the nominal milling program into the milling program for the actual gas turbine blade.

4. Process in accordance with one or more of the Claims 1 through 3,
characterized in that ,
the nominal milling program for the region of the flow inlet edge and/or the region of the flow outlet edge comprises several nominal milling paths, namely, respectively one nominal milling path is located in the region of the suction side, respectively one nominal milling path is located in the region of the pressure side, and preferably – interposed between these two nominal milling paths – several nominal milling paths for the transition region between the suction side and the pressure side, whereby each of the nominal milling paths comprises several nominal path points.

5. Process in accordance with one or more of the Claims 2 through 4,
characterized in that,
the, or each, series of measuring points determined in the region of the suction side is used to change the respective nominal milling path in such a manner that each nominal path point of the respective nominal milling path having a corresponding measuring point is shifted by the value of deviation between the ideal gas turbine blade and the actual gas turbine blade in the region of the suction side.

6. Process in accordance with Claim 5,
characterized in that,
an interpolation is performed for the nominal path points of the respective nominal milling path for which said points no corresponding measuring point is available.

7. Process in accordance with one or more of the Claims 2 through 6,
characterized in that,
the, or each, series of measuring points determined in the region of the pressure side is used to change the respective nominal milling path on the pressure side in such a manner that each nominal path point of the respective nominal milling path having a corresponding measuring

point is shifted by the value of deviation between the ideal gas turbine blade and the actual gas turbine blade in the region of the pressure side.

8. Process in accordance with Claim 7,
characterized in that,
an interpolation is performed for the nominal path points of the respective nominal milling path for which said points no corresponding measuring point is available.

9. Process in accordance with one or more of the Claims 2 through 8,
characterized in that,
an interpolation is performed for the, or each, nominal milling path located between the respective nominal milling path of the suction side and the respective nominal milling path of the pressure side in order to adapt said paths to the actual gas turbine blade.

10. Process in accordance with one or more of the Claims 6 through 9,
characterized in that,
spline interpolations are performed for the manufacture of fluidic and uniform surfaces in the region of the flow inlet edge and/or the flow outlet edge.